

REMARKS

Initially, Applicants would like to express their appreciation to the Examiner for the detailed Official Action provided, for entry of the previous amendments, and for withdrawal of the previous rejections.

Applicants note that on the first page of the Official Action the Examiner acknowledged receipt of the replacement sheet of drawings (containing Fig. 6) which was filed on November 29, 2006. Applicants respectfully request that the Examiner indicate that such drawing changes are acceptable in the next Official Action.

Upon entry of the above amendments, claims 1, 3, 15, 21, 22, 28 and 34 will have been amended and claims 35-46 will have been newly presented. Claims 1, 3-28 and 30-46 are currently pending. Applicants respectfully request entry of the present amendments, reconsideration of the outstanding rejections, and allowance of all the claims pending in the present application.

On pages 2-6 of the Official Action, claims 1, 3-12, 15-28 and 30-34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over ADACHI et al. (U.S. Patent No. 5,531,664).

Applicants respectfully traverse the rejection of claims 1, 3-12, 15-28 and 30-34 under 35 U.S.C. § 103(a).

Claim 1, as currently amended, recites, inter alia, "an extensible member that can be extended and contracted along said depth or z axis, comprising shape memory alloy configured and positioned to expand and contract linearly

along said depth or z axis; a housing for said extensible member and for at least one optical element located forward of said extensible member, said housing constraining said optical element to move linearly along the depth or z axis and limiting buckling of at least a portion of said extensible member when said extensible member is being extended; . . . wherein said extensible member has a forward end coupled to said optical element and a rearward end coupled to said housing at a point rearward of said optical element so that extension and contraction of said extensible member causes said optical element to advance or retreat linearly within said housing along said depth or z axis."

Claim 28, as currently amended, recites, inter alia, "providing an extensible member that can be extended and contracted along said depth or z axis, comprising shape memory alloy configured and positioned to expand and contract linearly along said depth or z axis; providing a housing for said extensible member and for at least one optical element located forward of said extensible member, said housing constraining said optical element to move linearly along the depth or z axis and limiting buckling of at least a portion of said extensible member when said extensible member is being extended; . . . coupling a forward end of said extensible member to said optical element and a rearward end of said extensible member to said housing at a point rearward of said optical element so that extension and contraction of said extensible member causes said optical element to advance or retreat linearly within said housing along said depth or z axis".

Applicants submit that ADACHI et al. lacks any disclosure of *a housing constraining an optical element to move linearly along the depth or z axis and limiting buckling of at least a portion of an extensible member when the extensible member is being extended*. In this regard, Applicants note that ADACHI et al. lacks any disclosure of a housing which *limits buckling of at least a portion of an extensible member when the extensible member is being extended*. For example, Applicants submit that the housing 170 shown in Fig. 33 of ADACHI et al. is not disclosed as limiting buckling of the SMA wire 177. Further, Applicants note that the Examiner has not provided any teaching of such a housing, and Applicants submit that providing such a housing in the system of ADACHI et al. would not have been obvious to one having ordinary skill in the art.

Claim 1 further recites, inter alia, "a feedback mechanism for controlling said heater and responsive to variations in said position; wherein said position is controllable by said heater and said position can be stabilized by said feedback mechanism."

Claim 28 further recites, inter alia, "providing a feedback signal in response to variations in said position and adjusting said temperature according to said feedback signal to stabilize said position; . . . whereby said position is controllable by adjusting said temperature and said position can be stabilized by said feedback signal."

Applicants submit that ADACHI et al. lacks any disclosure of providing a *feedback mechanism or feedback signal for stabilizing a position of a shape*

*memory alloy extensible member coupled to an optical element.* In this regard, Applicants note that the portion of ADACHI et al. noted by the Examiner is directed to the use of a shape memory alloy for controlling a bending degree or angle, and not a position along a depth or z axis (note column 8, line 61 through column 10, line 42). Contrast this, for example, with the shape memory alloy 28 which linearly expands/contracts axially in order to control position or an optical element in the depth or z direction 12, as depicted in Fig. 1A of the present application. Applicants further note that ADACHI et al., rather than providing *feedback responsive to variations in position*, is based on *resistance value detection* (note column 9, lines 11-15). Applicants submit that such disclosure cannot reasonably be characterized as teaching *feedback for stabilizing a position*, much less *a position of an optical element along a depth or z axis*. Accordingly, Applicants submit that providing such feedback for the SMA wire 177 having optical element 174 in the system of ADACHI et al. would not have been obvious to one having ordinary skill in the art.

Applicants also submit that dependent claims 3-12, 15-27 and 30-34, which are at least patentable due to their dependencies from claims 1 and 28 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. For example, Applicants submit that ADACHI et al. lacks any disclosure of the additional subject matter recited in claim 6 (feedback sensor for sensing position); claim 14 (feedback mechanism includes optical sensor having a pulsed red Light Emitting Diode and a Phase Locked Amplifying detecting diode); claim 15 (housing includes an

elongate member for housing the portion of the extensible member, the elongate member being longitudinally substantially rigid and laterally flexible); claim 21 (position is adjustable by movement of at least an exit aperture of optical fiber); and claims 22 and 34 (x-y scanning light from exit aperture of optical fiber).

Applicants respectfully submit that the rejection of claims 1, 3-12, 15-28 and 30-34 under 35 U.S.C. § 103(a) is improper at least for each and certainly for all of the above-noted reasons. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection, and an early indication of the allowance of all of the pending claims.

On pages 6 and 7 of the Official Action, claims 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over ADACHI et al. in view of various secondary references. However, Applicants submit that the teachings of these secondary references do not cure the above-noted deficiencies in the disclosure of ADACHI et al. with regard to claim 1. Further, Applicants submit that these dependent claims, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record. In this regard, Applicants submit that these secondary references constitute nonanalogous art, and that the modifications suggested by the Examiner are clearly the result of impermissible hindsight reasoning based upon the disclosure of the present application, rather than the teachings of the references themselves. Accordingly, Applicants respectfully submit that the rejections of claims 13 and 14 under 35 U.S.C. § 103(a) are improper at least for each and

certainly for all of the above-noted reasons, and respectfully request reconsideration and withdrawal of these rejections, and an early indication of the allowance of all of the pending claims.

Applicants further submit that newly presented claims 35-42, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention, and are also separately patentable over the prior art of record. For example, Applicants submit that the applied reference to ADACHI et al. lacks any disclosure of the additional subject matter recited in claim 40 (position is adjustable by movement of at least an exit aperture of optical fiber); and claims 35-39, 41 and 42 (x-y scanning light from exit aperture of optical fiber).

Applicants further submit that newly presented claims 43-46 are also patentable over the prior art of record. For example, Applicants submit that the prior art of record lacks any disclosure of the combination of features recited in independent claim 43, including the recited position control apparatus (including the recited housing and feedback mechanism) and the recited x-y scan mechanism.

Accordingly, Applicants respectfully request an early indication of the allowance of newly presented claims 35-46.

SUMMARY AND CONCLUSION

Entry and consideration of the present amendment, reconsideration of the outstanding Official Action, and allowance of the present application and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims that have been made in this amendment, which do not narrow the scope of the claims, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered cosmetic in nature, and to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully Submitted,  
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